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The following communications were read :—

Observations of N*EPTUNE*.

CAMBRIDGE. In the Meridian. (Professor Challis.)

Date.		Greenwich M. T.	R.A.	N. P. D.
1846.		h m s	h m s	° ′ ″
Oct.	8	8 43 27	21 52 13·29	103 29 43·4
	10	8 35 29	21 52 6·42	103 30 18·7
	13	8 23 31	21 51 56·90	103 31 8·7
	15	8 15 34	21 51 51·05	103 31 37·5
	16	8 11 35	21 51 48·43	103 31 53·9
	17	8 7 37	21 51 45·89	103 32 6·4
	19	7 59 40	21 51 40·98	103 32 31·2
	20	7 55 42	21 51 38·76	103 32 41·6
	23	7 43 48	21 51 32·60	103 33 7·1
	30	7 16 7	21 51 22·86	103 33 58·9
Nov.	1	7 8 13	21 51 21·16	103 34 9·7
	4	6 56 25	21 51 19·91	108 34 14·3
	11	6 28 54	21 51 20·78	103 34 6·1
	16	6 9 19	21 51 25·63	103 33 38·7
	18	6 1 30	21 51 28·43	103 33 23·8
	19	5 57 36	21 51 30·42	103 33 13·4
	20	5 53 43	... ...	103 33 3·3
	21	5 49 48	21 51 33·71	103 32 52·8
	22	5 45 54	21 51 35·40	103 32 41·7
	24	5 38 6	21 51 40·03	103 32 17·1
	26	5 30 19	21 51 44·91	103 31 52·7
	28	5 22 33	21 51 50·25	103 31 22·6
	30	5 14 47	21 51 56·30	103 30 50·6
Dec.	1	5 10 55	21 51 59·58	103 30 33·4
	3	5 3 9	21 52 6·11	103 29 56·6
	4	4 59 17	21 52 9·38	103 29 39·6

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With the Northumberland Equatoreal.

Date.	Greenwich M. T.	R.A.	N.P.D.	Number of Measures.
1846.	h m s	h m s	° ′ ″	
Oct. 3	8 2 58	21 52 32·58	103 28 2·5	7
	10 22 45	21 52 32·22	103 28 4·2	6
5	10 57 13	21 52 24·24	103 28 47·2	6
8	10 49 27	21 52 13·14	103 29 44·5	6
13	7 29 46	21 51 57·08	103 31 5·7	6
17	7 56 21	21 51 45·92	103 32 4·7	9
30	6 30 17	21 51 22·84	103 34 1·5	8
Nov. 2	8 42 56	21 51 20·97	103 34 13·1	6
3	9 52 17	21 51 20·20	103 34 10·9	6
16	7 4 42	21 51 25·77	103 33 35·0	5
18	7 26 54	21 51 28·68	103 33 23·7	3
19	6 50 47	21 51 30·21	103 33 14·5	6
26	6 0 16	21 51 44·83	103 31 49·8	4
Dec. 11	6 50 37	21 52 38·64	103 27 6·6	6
12	7 12 35	21 52 43·13	103 26 40·2	6
13	6 5 49	21 52 47·60	103 26 15·1	7
14	7 42 37	21 52 52·59	103 25 50·4	4
15	5 50 57	21 52 57·02	103 25 27·6	3
18	4 52 3	21 53 12·19	103 24 5·3	4
1847. Jan. 11	5 35 20	21 55 46·97	103 10 27·4	6
12	5 37 43	21 55 54·87	103 9 45·9	6
14	5 45 48	21 56 9·82	103 8 27·3	6
15	5 49 9	21 56 18·04	103 7 42·4	6

The star of reference throughout is No. 7648 of the British Association Catalogue, the assumed mean place of which, Jan. 1, 1846, determined by 16 transit and 8 circle observations, is

$$\text{R.A.} = 21^{h}\ 50^{m}\ 5^{s}{\cdot}91,\ \text{N.P.D.} = 103^{\circ}\ 23'\ 55''{\cdot}56.$$

Professor Challis says, "I have been able with the Northumberland Telescope to verify Mr. Lassell's suspicion of a ring. I first received the impression of a ring on Jan. 12. Two independent drawings, made by myself and my assistant, Mr. Morgan, gave the same representation of its appearance and position. The ring is very little open. It diameter makes an angle in the south preceding quadrant of 66° with the parallel of declination, according to a measurement (not very satisfactorily taken) on Jan. 15. The

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ratio of the diameter of the ring to that of the planet is by estimation that of 3 to 2. I am unable to account for my not having noticed the ring earlier."

Hamburg. Equatoreal. (M. Rümker.)

Date.	Hamburg M.T.	R.A.	Dec.
1846. Dec. 24	6° 9′ 19″·0	328° 26′ 27″·3	−13° 21′ 8″·7
25	5 40 0·0	328 27 45·5	13 20 24·6
27	5 41 34·6	328 30 56·4	13 19 31·7
28	5 20 31·4	328 32 29·3	13 18 57·9
1847. Jan. 5	5 32 43·0	328 45 48·3	13 14 23·0
8	5 46 50·0	328 51 15·8	13 12 27·9
11	5 45 19·8	328 56 43·5	13 10 27·9
12	5 55 52·6	328 58 35·5	13 9 48·5
13	5 52 21·7	329 0 29·5	−13 9 4·7

Corrected Elements of Neptune, *by Mr. Adams.*

"The following results respecting the orbit of the recently discovered planet *Neptune* may, perhaps, not be uninteresting to the Society. They are deduced from the early Cambridge observations of August 4 and August 12, combined with nine later ones made at the same observatory, those being generally selected where the planet was observed with the equatoreal and meridian instruments on the same day. To each element found I have annexed the probable error to which it is subject, in order that it may be judged what reliance may be placed upon the value obtained. It will be seen that some tolerably definite information respecting the orbit is already afforded by the observations, though they are, of course, insufficient to determine, even roughly, all the elements.

Epoch 1846, Aug. 8·0, G. M. T.

True Long. of the Planet, M. Eq. 1847·0	326° 41′ 12″·3 ± 2″·55
Motion in Longitude in 100 days	36′ 5″·52 ± 2″·82
Distance of Planet from the Sun	30·008 ± 0·0312
Change of Distance from the Sun in 100 days	−0·01947 ± 0·0365
Heliocentric Latitude, South	30′ 34″·35 ± 2″·24
Increase of Heliocentric Latitude in 100 days	1′ 4″·44 ± 2″·05

"Hence we find,

Inclination of the Orbit	1° 46′ 49″·1 ± 3′ 7″
Longitude of Descending Node	310° 3′ 44″·0 ± 30′ 37″
Semi-latus Rectum	30·228 ± 0·0922